

## BOX LOCATING ACCESSORY

### 5 FIELD OF THE INVENTION

This invention relates to a box locating accessory that is intended to assist in the stacking of boxes in a stable manner so that the stability of a stack of boxes is enhanced. More particularly, but not exclusively, the invention is concerned with enhancing the stability of boxes stacked on a palette to thereby facilitate handling of the palette with a very much diminished possibility of boxes falling off the stack.

It is to be understood that the term "box" or "boxes" as used in this specification is intended to include any boxes, irrespective of the material of which they are made, and including, in particular, corrugated cardboard cartons and any other articles shaped in the form of a rectangular parallelepiped.

### 20 BACKGROUND TO THE INVENTION

The stacking of boxes, in particular on pallets, is often accompanied by the danger that the boxes become somewhat misaligned in the vertical direction and, furthermore, that a stack of boxes is unstable, at least to some extent, thereby leading to a very real danger that one or more boxes could fall off the stack, particularly when a palette on which a stack is located is moved using a forklift truck.

A partial solution to the problem, insofar as it relates to pallets, has been to nail, to the palette at each corner, an angle section having a length selected to extend up the height of a stack of boxes. The angle sections serve to

locate the corners of boxes so that they may be aligned to coincide with the corners of the palette. A strap has, in some cases, been used to encircle the boxes and angle sections at the corners. As regards elevated layers of boxes, this expedient is difficult to implement. It is also of little assistance in instances in which the boxes do not fit adequately neatly between the corners of a palette

### **OBJECT OF THE INVENTION**

10 It is, accordingly, an object of this invention to provide a box locating accessory that, in use, will be easy to install and yet contribute significantly to enhancing the stability of stacks of boxes irrespective of whether or not a palette is involved.

### **15 SUMMARY OF THE INVENTION**

In accordance with this invention there is provided a box locating accessory comprising a body having a pair of flanges diverging at right angles to each other for operative cooperation with the corners of stacked boxes hold them 20 in generally vertical alignment, the accessory being characterised in that it has, in a generally central location between the ends of the body, at least one locating formation extending from the flanges in a plane generally at right angles to both flanges of the body with the locating formation being adapted to be accommodated between the top and bottom of a pair of vertically 25 stacked boxes.

Further features of the invention provide for the locating formation to be a flat tongue attached to the inside surface of the flanges and preferably integral therewith so as to lie in a plane at right angles to the flanges; for the 30 accessory to have one or more attachment formations for cooperation with a strap for holding the accessory in its operative position in relation to one or

more other accessories cooperating with the same pair of juxtaposed layers of boxes; for the attachment formations to be selected from apertures through said tongue and a retaining loop formation extending outwards from one or both of the flanges of the body; for the flanges to have, on the outside surface thereof, transverse guiding ribs located symmetrically about the centre of the length of the accessory and adapted for guiding an external strap relative to the accessory; and for the inside surface of the flanges, at least on one side of the locating formation, to be provided with one or more projections for operative engagement with the sides of a box to prevent slippage of the said inside surface relative to the box.

The invention also provides a method of locating stacked boxes one relative to another comprising installing an accessory as defined above at each of four corners of a pair of superjacent layers of a stack of boxes with the locating formation of each accessory positioned between a super-jacent and sub-jacent box and tightening straps connecting the accessories to maintain them in position in the diagonal direction relative to each other. The straps may extend diagonally between diagonally opposite accessories or may encircle four accessories installed at the corners of the layers of boxes.

In order that the above and other features of the invention may be more fully understood two embodiments thereof as well as their application will now be described with reference to the accompanying drawings.

## 25      **BRIEF DESCRIPTION OF THE DRAWINGS**

In the drawings:-

Figure 1    is a three-dimensional illustration of a first embodiment of  
30                 the invention;

- Figure 2 is a sectional view taken along line II to II in Figure 1 and showing the association of a diagonally extending strap with the attachment formation;
- 5      Figure 3 is an elevation illustrating a stack of boxes in association with which a series of accessories according to the invention has been applied;
- 10     Figure 4 is a plan view showing the interrelationship of four accessories according to the invention assembled at the top of a layer of a stack of boxes;
- 15     Figure 5 is a view similar to Figure 1 but of a second embodiment of the invention;
- Figure 6 is a plan view of the embodiment illustrated in Figure 5;
- Figure 7 is a side view thereof;
- 20     Figure 8 is a plan view of a stack of boxes fitted with accessories of this embodiment of the invention; and,
- Figure 9 is a schematic elevation showing the installation of accessories illustrated in Figure 8.

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**DETAILED DESCRIPTION WITH REFERENCE TO THE DRAWINGS**

In the embodiment of the invention illustrated in Figures 1 and 2, an accessory according to the invention has a body (1) consisting of two flanges (2) extending at right angles to each other from a corner (3). The length of the accessory is to be operatively upright and accordingly, for ease of description, it will be referred to as the height of the accessory.

- Midway up the height of the accessory is a locating formation in the form of a tongue (4) fixed to the inside surfaces (5) of the flanges (2), the tongue being orientated in a plane at right angles to both flanges. The tongue extends 5 inwards with its centreline (6) extending along a line bisecting the right angle between the flanges and, as illustrated, the tongue may assume the shape very much of an arrow with the arrow head having its two divergent edges secured to the inside surfaces of the flanges.
- The tongue has a pair of slot-like apertures (7) therein and spaced apart 10 along the centreline of the plate from the corner (3). The apertures are configured to receive a flexible strap (8) threaded therethrough and preferably so that the apertures can be employed, by suitably threading the strap through them, in a self locking buckle type of manner, as will be quite apparent to those skilled in the art.
- 15 Referring now more particularly to Figures 3 and 4 of the drawings, a set of four of the accessories described above are generally utilised together in order to locate the four corners of super- and subjacent layers of stacked boxes (9).
- 20 In order to render the four accessories operational, in the case of this embodiment of the invention, they are arranged in pairs at diagonally opposite corners on the top of one layer of boxes, or in the case of the palette itself, on the palette (not shown), and the tongues of the two 25 diagonally opposite accessories are interconnected with a diagonally extending strap (8) as shown most clearly in Figure 4. Once the two straps have been tightened adequately the next layer of boxes is located on top of the subjacent layer with the corners received neatly within the flanges of the accessories that extend upwards.
- 30 In this manner a stack of boxes can be rendered extremely stable by having a set of accessories, in the first place, if appropriate, locating a box relative to

a palette, as may be necessary, and in the next, locating each super- and subjacent layer of boxes relative to each other, as indicated above.

It will be understood that numerous variations may be made to the embodiment of the invention described above without departing from the scope hereof. In particular, as regards locating the accessories relative to the top of a box of a layer that is to become a subjacent layer for receiving a one or more layers of boxes on top of it, the inside surfaces of the one half of the flanges could have spikes (10) extending therefrom that could penetrate the outer layer of, for example, a corrugated cardboard carton. The inner surface of the upper half of the flanges could, if required, also be provided with friction affording protrusions (11) that need to be configured so that vertical introduction and removal of superjacent boxes is enabled.

Figures 5 to 9 of the drawings illustrate a second embodiment of the invention that has some differences, and, in particular, is configured to be installed somewhat differently and, possibly, more conveniently. In this particular case the accessory (12) is injection moulded from thermoplastic material and has a pair of flanges (13) extending at right angles to each other, as described above, with a central tongue (14) moulded integral therewith. The tongue, in this case, is somewhat tapered towards its free end (15) in order to facilitate its introduction between the bottom and top of a pair of super-jacent boxes subsequent to their being stacked one on top of the other.

Also, in this case, a discontinuous loop (16) extends outwards from one free edge of a flange so that it can serve as an attachment formation for holding a strap captive relative to the accessory with the strap on the outside thereof. The outside surface of each flange has a pair of spaced locating ridges (17) formed integral therewith to guide a transverse strap (18) located centrally on the outside of the flanges.

In this embodiment of the invention, the accessory, being adapted to be fitted to a stack of boxes indicated by numeral (19) after they have been stacked one on top of the other, are held in the operative position by the strap passing around the outside surface of four accessories (12) on the same level, as indicated in Figures 8 and 9. The reason for this is that it would not be possible to install a diagonal strap as described above in this application of the invention.

5 In order to prevent relative vertical movement of two super-jacent stacked boxes, the accessory has moulded integral therewith a plurality of spikes (20) 10 on the inside surface of each flange with the spikes extending in a direction that is diagonal in the installed condition to enable the introduction into, and removal from, associated boxes by diagonal movement of the accessories. As a result of this method of installation, it is possible to have spikes on both 15 upper and lower flanges and, quite clearly, the accessories would have to be removed before an upper box and then be removed from a lower box.

20 Of course, the second embodiment of the invention may be configured to be used in either a manner as described with reference to Figures 1 to 4, or with reference to Figures 5 to 9, by providing the tongue (14) with slot like apertures as described with reference to Figures 1 to 4.

Numerous other variations may be made to the embodiments of the invention 25 described above without departing from the scope hereof.

The invention therefore provides extremely simple yet highly effective accessories for enabling stable stacks of boxes to be formed.